Bel Isle & Windsor Ferry Co

THE MARINE RECORD.

DEVOTED TO COMMERCE, ENGINEERING AND SCIENCE.

VOL. IX NO. 34. CLEVELAND. O., AUGUT 25, 1887. $2.00 PER ANNUM SINGLE COPIES 5 CENTS

AROUND THE LAKES.

CLEVELAND.

The natty little steamer American Eagle had a full complement of passengers to witness the launch of the Aurora on Tuesday.

The body of the engineer of the steamer Walters was found Wednesday about 100 yards from the sunken vessel, and that of Captain Gillespie's ten-year-old daughter.

Record was made at the custom house of the sale of one-sixteenth of the river tug Samson for $800. The transaction was between Mr. W. H. Becker and Captain C. E. Benham, the latter gentleman being the purchaser.

We are pleased to note that the lakes again head the list in large freight tonnage. The Aurora which is credited by the commissioner of navigation with 1859.82 tons net, is the largest boat built in the United States for the week ended August 20. She is closely followed, however, by the Parthian of 1090.25 tons, built at Wilmington, Del.

Captain John Kelly, of Saginaw, has purchased L. D. Sanborn's one-half interest in the steambarge Jas. H. Prentice and her consorts, the schooners Goshawk and A. A. Carpenter, the consideration being $60,000. The boats are plying in the Lake Superior iron ore trade and are a fine fleet. The Prentice is 1,150, the Goshawk 1,040, and the Carpenter 1,050 tons burden.

Coal and ore tonnage was wanted yesterday at the full rates noted for the last several days, $1.50 for ore from Escanaba, $1.90 from Marquette, and $2.35 to $2.40 from Ashland. Coal carriers are asking and getting $1.10 to Chicago, 90c to $1 to Milwaukee, and about the latter figures to Lake Superior ports. The only charters reported yesterday were the steamer Superior, coal, Sandusky to Ashland, schooner Sandusky, coal, Toledo to Ashland, both at $1.

Mr. and Mrs. M. W. Parrish and Mrs. Reed and Mrs. Fessenden, of Detroit, are in the city to spend a few days. They came down on the City of Cleveland. Mr. M. W. Parrish is the inventor of the system of electric signal bells now in use on the steamer City of Cleveland between the master and engineer. Captain Laughlen and Engineer Reed are well satisfied with the system, and declare that it adds greatly to safety and lightens the duties of both.

Since last report the barge Sea Gull was in Cleveland drydock to be recalked; the steamer R. R. Rhodes to receive new wheel; the schooner D. P. Rhodes to stop leak; the schooner M. W. Page to calk buts and other repairs; tug Allie May for new wheel; barge Midnight to have buts calked and slight repairs; barge S. F. Atwater to have leak stopped; steamer Missoula was in to change the lead of her wheel. She has one of the Globe Iron Works sectional wheels. Will make it coarser lead.

The new steamer Chenango, Captain Martin O'Toole, built by John Oades for the Inter-Lake Transportation Co., made her first appearance at this port Tuesday. Her maiden trip was from Detroit to Buffalo with grain, after which she took a cargo of coal to Milwaukee. She then went to Escanaba for a cargo of oar to Cleveland, bringing down 1157 tons. She is a good model and was much admired by vesselmen, showing much side out, and giving evidence of being a good puller and no inclination to be obliged to seek shelter from stress of weather. She tows the schooner Burt, Captain J. E. Gotham.

OSWEGO.

The tug C. P. Morey was sold to Ashtabula parties for $3050. She has been running in Ashtabula this season and upon balancing the books the other day it was found that the tug had paid for herself which is certainly a good season's work. Harry Gallagher of this city is engineer on the Morey.

CHICAGO.

Special to the Marine Record

On Wednesday the demand for grain vessels was very active. Rates were firm at 3⅞ cents on wheat and 3⅝ cents on corn to Buffalo, and 3⅛ cents on corn to Georgian Bay.

Captain Julius Baker is putting his schooner, the H. A. Richmond, in first class shape for the grain trade. She is at Miller Bros.' shipyard, receiving new shelf pieces from stem to stern; also, thirteen heavy iron knees on each side under the shelf pieces. She will also receive a thorough recalking.

The steamer John A. Dix, when winding near her dock at the foot of South Clark street, collided with Clark street bridge, carrying away considerable of the railing on the bridge, and damaging her own fantail, rail, stanchions, and hurricane deck.

The steambarge A. D. Hayward had repairs completed on her and left this port Saturday night.

At the Chicago drydock the steambarge J. E. Rumble was in dock for some calking and a new wheel; the schooner Minnie Mueller for bottom calking; the steambarge A. E. Wilds to have her wheel fastened and some calking; the steambarge City of New York for repairs to sternbearing and wheel; the schooner Four Brothers for some new plank in bottom, a new center board and some calking; two scows from South Chicago for calking all over; the propellers City of Duluth and St. Joseph, schooner Kelderhouse and schooner-yacht Idler received minor repairs; the steamer John A. Dix received repairs to fantail and hurricane deck, and some new stanchions and rail aft.

The iron steam yacht Scotia, owned by James Corrigan, Cleveland, having received a thorough overhauling and refitting, was launched at Miller Bros.' shipyard last Thursday. Captain Buscey, who has been superintending the repairs, left here with her Saturday night for Cleveland.

At Miller Bros.' drydocks the tug A. Miller was in dock and received a new rudder and had a leak stopped; schooners Orkney Lass, Wm. Crosthwaite, City of Erie and Forrest were in to have leaks stopped; the schooner Lottie Mason for some new plank in her bottom and calking; the steamer Minnie B. for bottom calking; the tug A. A. Carpenter for a new wheel; the schooner Wm. Jones had her garboard strake taken out to have limbers cut; the tug G. W. Gardner had a leak stopped; schooner H. A. Richmond was in dock for new shelf pieces, new iron knees, and recalking; the schooner C. P. Minch received two new topmasts; schooner Commerce a new gaff; schooner H. Rand a new bowsprit and jibboom.

Captain Henry Williams has resigned command of the schooner Naiad, after having sailed her for seventeen years. A. Hanson, who has been mate with him for six years, has been given command of her by her owners, Messrs. Goodenow & Hinds.

Several steambarges and vessels which arrived Tuesday, bore evidence of the heavy weather they had experienced during Monday night's northerly gale. Portions of their deck loads of lumber had been washed off and lost, and two schooners lost some of their sails.

The schooner Thomas Howland, which arrived at South Chicago Tuesday evening, narrowly escaped foundering in the heavy blow of Monday night. She was ore-laden from Escanaba and sprung aleak while coming up Lake Michigan. The crew manned the pumps until they were exhausted, and when the vessel was abreast of Racine she had two feet of water in her hold. A signal of distress was set in the rigging and the Racine life-saving crew promptly responded and remained aboard of the vessel until she reached her destination.

Captain Anderson and four sailors, composing the crew of the schooner Gessine, were found Tuesday morning, at Michigan City, Ind., clinging for dear life to the outer breakwater, with seas constantly washing over them. Their vessel, loaded with 100,000 feet of lumber, had been driven on the pier by the high gale and unusually strong undertow. The five men managed to jump on the piles at the right moment, and saw the schooner pound herself to pieces.

WILLIAMS.

BUFFALO.

Large grain shortages are seldom reported on Chicago cargoes. The propeller Arctic fell short 120 bushels on 17,200 bushels of wheat, and her consort, Mills, 180 bushels on 36,600 bushels of corn. The cargo of the Sherman, the other consort, not yet unloaded. These boats loaded at Chicago.

The propeller India, just arrived, will be docked to have her bottom examined, she having struck below the Point au Barque while coming down. She was leaking but a trifle.

A libel for $1,000 damages was filed against the propeller Glasgow, and she was seized at Tonawanda. July 28 while moored at a dock at Tonawanda she blew off steam and severely scalded Frank Sammons, who was in a passing steam yacht. It is said there was malice in the act.

Captain M. Danahy, owner and master of the schooner F. N. Foster, stranded on Fisherman's shoal, has arrived here. He says it will be an expensive job to get her afloat.

The little schooner Emily and Eliza, owned by W. Simpson, has been sold to M. Coyne and M. Dunn for $1,200 cash.

Captain M. M. Drake has returned from closing the contracts for the two Lackawanna steamers at Cleveland. He does not speak very favorably of the proposed leasing of the Westover and Roanoke by that line. They are hardly suitable for the business they will have to do, he says. As to the excursion boat, proposed to be built by the owners of the Periwinkle, Captain Drake favors it and says they must have one. He can not get it built in Cleveland for next season, however, and some other plan must be devised.

Captain Mahan, government engineer in charge, is of the opinion that the survey of Niagara river, from Black Rock to Tonawanda, now in process, will take about a month. Of course there is no appropriation for deepening the channel to sixteen feet as proposed, but the fact that an item preparing for such work was in the late lamented river and harbor bill, emboldened the authorities to go ahead. Captain Mahan finds that there is a channel well over to the Canada side which is deep enough, but is so crooked as to be useless. The work necessary, he thinks, is the blasting off of the angles of the side walls, and straightening out the course. In case some of it happens to be in Canadian waters he does not apprehend that anybody from that side will complain.

FRANKFORT.

Special to the Marine Record.

John McAffrey, who was on the ill-fated Champlain at the time of her disaster, spent a few days here the past week.

General O. M. Poe, in charge of harbor work, this district, was in town this week, looking over the harbor.

Tug Minnie Warren, towing steam pile driver Bumper, from Charlevoix to Portage Lake, lay weather-bound in our harbor a few days the past week.

The steambarge William Rudolph, now owned here, will have her named changed to Lucetta.

It is rumored that a sub-marine cable will be laid from Manitou island to mainland soon.

Tug Albatross has been in port some days. She is for sale. BURMEISTER.

MILWAUKEE.

Captain Emery, of the steambarge J. C. Pringle, was fined $20 and costs last Saturday for violating the bridge ordinance in blowing his whistle in the draw of the Menominee bridge.

DETROIT.

Special to the Marine Record.

The magnificent new steambarge which has been building at the Orleans street yards of the Detroit Drydock Co. during the past few months, was launched Saturday afternoon in the presence of about one thousand people. While she stuck a few minutes on the ways, no great delay was occasioned in getting her off. She has been christened the Iron King, and will be enrolled in the fleet of the new Duluth & Atlantic Transportation Co., organized in this city. It is the first vessel in several years that has been launched with all the machinery aboard, and the heaviest one that has been put in the water by the Detroit Drydock Co. in a finished condition. The machinery was hoisted in her before the carpenters were through with the hull, on account of lack of suitable dock room and to save time. A gang of men who were putting the finishing touches on her worked away while she was going into the water. She will be ready to load her first cargo in about ten days. The Iron King measures 250 feet keel, 265 feet over all, 38 feet 4 inches beam, and 22 feet molded depth. She is equipped with the latest improved machinery, including an American ship windlass, and is in all respects a model freight carrier. She will be employed in the general freighting business, and will be used principally to transport iron and grain. Captain James Millen will manage the Duluth and Atlantic boats along with those of the Detroit Transportation Co.

The barge Plymouth had an overhauling at Clark's drydock; the steambarge Chauncey Hurlburt had some new plank in bottom and recalked at Detroit drydock.

It is reported that Hall & Co., of Ogdensburg, have bought the large tug John Martin, of Detroit.

The new propeller Elfinmere, built at Bay City, by Frank Wheeler, arrived down at the Detroit drydock Monday afternoon. She is to receive her engine and boiler at this port.

The new railway ferry, now building at Detroit drydock, is well under way, and it is expected that she will be finished by the middle of December. It is intended that she will make the trip from Detroit to Mackinac in midwinter. If she is able to overcome the ice between here and the Straits she will doubtless be able to cope with the ice at that point successfully.

The barge Kelley has been sold to A. N. Moffatt and others for $3,500.

A signal station is soon to be placed at the Sault. As this is one of the most important points on the chain of lakes, it will doubtless be of great service to vesselmen.

Eldridge G. Merick, owner of the schooner Monterey, has begun suit in the United States court agai st the schooner Midland Rover, for $1,000 damages, the result of a collision on Lake Huron, near the mouth of St. Clair river, at midnight, August 13, 1887.

The International Wrecking and Transportation Co. has attached the schooner Starling in the United States district court for $2,250. It is claimed in the libel that in 1886 the schooner sunk in Sarnia Bay and was raised by the libelant company. That subsequently she waterlogged at Walkerville, was raised and pumped out, and again sprung aleak at Perry Harbor and was towed to St. Catharines. Alex McVittie and Jas. W. Millen appraised her at $2,250; a bond has been given to certify a decree for that amount and the schooner released.

Captain A. A. Cox, master of the steamer J. H. Farwell, says: There are two obstructions directly in mid-channel that ought to be removed. One is at Sailors' Encampment, Sault river, with less than fifteen feet of water on it, seemingly a rock. The other is in mid-channel of the St. Louie river, Wis., Superior entrance, about half a mile south of the Minnesota Point lighthouse, with less than fourteen feet six inches of water. Both of these obstructions are dangerous and ought to be removed.

AMERICAN NAVIGATION.

The great interests of agriculture, manufactures, and maritime commerce are recognized as the most productive sources of a nation's wealth and independence. The country which is most favorably located for the prosecution of these important industries might reasonably be expected to be the most prosperous, the farthest advanced in the emoluments of wealth and the highest degree of civilization. History, both ancient and modern, affords many examples which teach us lessons on these points, and the rapid rise and development of our country furnishes a striking illustration of the truth of the proposition. In the early period of our existence attention was given to the necessity of fostering these diversified interests in order to establish on American soil a complete economic system which from the exigencies of the time should render us as much as was practicable independent of foreign powers.

Such a policy in the infancy of the nation was wise, and the foresight of the fathers paved the way for a large influx of industrial emigration and for the development of our commerce, which have resulted in the present enormous material welfare of the people of the United States.

The capacity for government shown by the early Americans was, says Lindsay, equal, if not superior, to that of the race from which they descended in their steadfast application of the principles calculated to increase both their own commerce and navigation.

That this country possessed an advantageous geographical position for the successful prosecution of all these interests was, perhaps, not so apparent then as it is now.

In agriculture, the vast domain, with its varied climate and fertile soil, that has since been opened up to cultivation, was then a sealed volume, which required the adoption of a system of internal improvements, and which was generously granted by the central government.

Our pioneers in manufactures had less to encourage them; but they were hardy, laborious, and hopeful, and as necessity in their case was the mother of invention, men with cunning brain and hand solved many a problem that had puzzled them, which resulted in machinery that multiplied the labor of the skilled workmen indefinitely and facilitated production, the demand for which was stimulated by cheapness until the character and quality of American inventions were recognized by civilized nations. But the invention of one year was only the stepping stone to invention and improvement and wider application in the next. And now the general system of our manufactures having been encouraged by a liberal sympathy on the part of the government, embraces every commodity and has reached a degree of perfection which has demanded and obtained a distinct recognition for all that the United States can produce to aid in supplying the wants of the world.

In maritime commerce the necessity of an American merchant marine was early recognized, and although our forests at that day afforded the advantages of cheaper timber for the construction of vessels than most countries possessed, and our extensive coasts were lined with excellent harbors, affording every facility for developing an extensive shipping interest, it was deemed wise to take the ship-building industry under the care of the general government. Among the first acts of congress relating to navigation, certain privileges were granted to American-built ships, and these privileges, which had no small influence in promoting early ship-building, are some of them on the statute-book to-day. A thriving mercantile marine was rapidly built up under the system thus early inaugurated, which continued to be commensurate with the other two great industries of the nation until the unexpected discovery and adaptation of iron for ship-building purposes. But although iron was made use of in ship-building as early as 1840, it was not till the art of constructing iron ships and steamers had grown to perfection, and the price of the manufactured material had reached a minimum point which enabled the ship builders of Great Britain to put iron tonnage afloat for about the same cost as the wooden vessels of this country, that the conditions were reversed, and the advantages we had enjoyed were transferred to foreign shores.

In looking back over the progress of our merchant shipping, we find that, up to about the year 1840, we built vessels to carry our cotton, tobacco, grain, lumber, etc., to foreign markets, returning with such products as we could get on freight, or purchase with chance of profit; and the supply of tonnage about equaled the demand. In the decade 1840 to 1850 the guano trade gradually opened to foreign-going ships. In this period, also, occurred the famine in Ireland, causing a great demand for our breadstuffs, and vessels to carry it of a more improved build than the cotton ships; then came war with Mexico, and a demand for government transports, followed by the discovery of gold in California, the emigratton thither, and the call for faster ships adapted to lengthy trans-tropical voyages.

In this decade, also, the British navigation laws were repealed, which opened up to us a participation in the carrying trade between Great Britain and all her colonies and East India possessions.

These events combined to create an era in the carrying trade of the world which became very profitable, and the coasts of New England were studded with shipyards which continued to prosper until the financial panic of 1857, a result in part of the great overproduction that had been carried on. A depression continued until the war which broke out in 1861 created a fresh demand for vessels and offered an opportunity for American ship owners to sell them abroad. This period was the great opportunity for the small neutral states that had treaties with us to buy our ships, and by their methods of cheaper manning and provisioning they made great profits, stimulating them to increase their tonnage beyond the requirements of trade.

COMMERCIAL TREATIES.

Treaties of commerce are advantageous when the privileges conceded are reciprocal, but not when more of these are given than received. It is feared that some of our commercial treaties operate to the injury rather than to the benefit of the true interests of our mercantile marine.

The trade (in exports and imports) of this country has grown to such vast proportions that what might have been considered a fair exchange of commercial rights and privileges a half century ago is no longer so. To exchange the benefits derived from a carrying trade whose value in merchandise, received and sent abroad, amounts to over $1,400,000,000 annually, for what some countries, having little or no trade can give us in return is, of course, a simple gift on the part of the United States. The "favored-nation" clause is, notwithstanding, still in force in some of our old treaties with such nations, and although the terms were, perhaps, fair and equitable at the time they were ratified, it is said that they have of late years operated to the detriment of our shipping, and it is feared that in the future they must militate still more to the disadvantage of our flag.

It is to be hoped that favorable commercial treaties, in which the interest of our merchant marine shall be more fully guarded, will be negotiated in the future.

The question of how much in such cases should be given for a little in return, is a serious one, which our statesmen and diplomatists have, with a proper regard for our maritime interests as well as for the comity of nations, to consider. It was the remark of a distinguished English merchant, Mr. Alexander Baring, when speaking in reference to the shipping interests of Great Britain, that:

The only beneficial care that a government can take of its commerce is to afford it general protection in time of war, to remove by treaties the restrictions of foreign governments in times of peace, and to continuously abstain from any, however plausible, of its own creating.

IMPORTANT WATERWAYS.

The annual report of Major O. M. Poe, engineer in charge of the improvements upon the northern coast of Michigan, the St. Mary's river, the Saginaw river, Detroit river, and minor harbors along Lake Huron, has been received at the war department. Its main and most interesting feature is, of course, the improvements upon the St. Mary's river and the falls canal, and to this Major Poe devotes considerable space. The project now in hand for the improvement of the canal is to increase the present 16 foot depth to 20 feet, and to replace the locks at present in use by a single lock 800 feet long, 100 feet wide, and with a minimum depth of 21 feet on the mitresills. It is less than seven years since the canal, with its present depth of 16 feet increased from 12, was thrown open to navigation, and Major Poe states that the water draft of vessels and the tonnage both registered, and freight, in consequence so increased as to demand immediately the improvement set forth. In January last Major Poe sent to congress a very interesting detailed report of the plans and probable cost of the proposed improvements, a synopsis of which was printed at that time. The cost of the project is set down at $4.738,865, and it has been practically approved by congress, which last year appropriated something over $200,000 to commence the work. Major Poe favors pushing the work to the greatest extent possible, and says he can use $2,235,875 next year to good advantage. Of this sum $980.000, or adding for contingencies the usual percentage $1,225,000, is for the masonry on the new locks. If it is not thought best to cut down the amount named, Major Poe recommends dropping the amount for masonry and intimates that he ought certainly to have the remaining $1,010.875 to work at blasting, dredging, and surveys. He says a survey of the front of Ft. Brady for a pier its entire length has been made.

As an argument in favor of pushing the work upon the canal to completion the engineer makes an interesting comparison showing the tonnage passing through the Suez and St. Mary's Falls canal, respectively, during the year 1886. It is shown that 3,035 more tonnage passed through the latter than the former. Regarding the operations of the canal for the fiscal year ended June 30, Major Poe shows the following traffic locked through: Side wheel steamers, 40; screw steamers, 4,800; sail vessels, 2,589; rafts and unregistered craft, 437; total passages, 7,926; total registered tonnage 4,388,691; total registered tonnage since opening the canal in 1855, 37,684,802. The following freight and passenger traffic passed through the canal the past fiscal year; coal, tons, 1,173,544; copper, tons, 35,402; flour, bbls, 1,543,443; wheat, bushels, 21,962,967; grain, other than wheat, bushels, 674,409; iron ore, net tons, 2,172,304; pig and manufactured iron, tons, 116,324; lumber, feet, 151,333,000; salt, bbls, 157,139; silver ore, tons, 1,129; building stone, cords, 10,326; miscellaneous and unclassified freight, 256,728: number of passengers, 28,848. Compared with last year the number of passing vessels increased 1,723, the number of lockage increased 460; the registered tonnage increased 859,507 and the freight tonnage increased 1,181,788 tons. The cost of operating decreased 1.29 per vessel and 1.88 per lockage, or 22-100 of a cent per registered ton and 23-100 of a cent freight. In addition to the lumber reported as passing through the canal during the fiscal year, 15,800,000 feet b. m. of pine saw logs were run down the rapids for manufacture below. The building of the railroad bridge across the canal and rapids is likely to interfere with this mode of transportation and throw additional burden upon the canal. Should this prove to be the case to any great extent it may be necessary to close the canal to rafts. The total amount of registered tonnage which has passed through the canal since the opening in 1855 is 37,684,802 tons, of which over half—17,732,315—has passed through in the six years since the new lock was opened in 1881.

The cost of operating the canal last year was $22,138 less $452 received for dry docking vessels. The Hay Lake channel, which is part of the St. Mary's River improvement, has been pushed as far as the surveys and Major Poe recommends an appropriation of $500,000 next year for beginning the work. The entire project is estimated to cost $2,184,115.

THE SAGINAW RIVER.

The next most important improvement that Major Poe has in hand is the Saginaw river. The project is for a two hundred foot channel, fourteen feet deep from Saginaw to Bay City, and twelve feet deep from Bay City to the head of the river, a total distance of twenty-three miles. The principal work is dredging. Major Poe had $33,750 for this year's work, and wants $137,050 for next year. He proposes to divide this as follows: Above Bay City, $33,925; opposite and below Bay City, $88,125; for general use $15,000. It will require $337,250 to complete the project. For deepening the channel in the Detroit river at Lime Kiln crossing Major Poe asks $130,500 for next year.

TRIPLE EXPANSION EGINES.

An interesting table has been compiled to show the difference in the fuel consumption of a number of steamships, part of which had compound and part triple expansion engines. The results of the workings of eleven compound and nine triple expansion engines are given in the table which was attached to a paper recently read at the Northeast Coast institution of engineers and shipbuilders, by Mr. J. P. Hall. The paper was an attempt to discover the relative value of the two kinds of engines "from a shipowner's point of view," and after dealing with the questions of space, of wear and tear, and of the life of the different kinds of boilers, the writer dealt with the very important question of fuel consumption. The vessels, whose performances are give , are of the cargo-carrying type, many of them built by the company (Palmer's Shipbuilding & Iron Co., limited) Mr. Hall is connected with, and where this is not the case he considered that the facts were equally to be relied on. Care was taken to select voyages where the weather was "reasonably fine, and as nearly as possible uniform." The tables are thus arrived at: The "consumption is taken at a speed of 10 knots, either increased or reduced, on the assumption that the power or coal varies as the cube of the speed," and the consumption tables are thus brought to the speed of 10 knots with 1,000 tons weight, and 1,000 knots steamed, for simplicity in comparison. Thus tested, the eleven steamers fitted with compound engines had a consumption of 19.748 tons on the displacement performance, whilst the nine triple expansion engined steamers had a consumption of 14.859 tons on the displacement performance. On the deadweight performances the compounds had a mean consumption of 30.481 tons, and the triple expansion engines one of 22.744 tons. Thus the saving on the average of the vessels is 24.75 per cent on displacement performances, and 25 38 per cent on the deadweight performances. Mr. Hall gives in his table a number of instances in detail out of which these averages arise, one of which, being a comparison between two vessels owned by the same firm, and under the same superintending engineer, of similar size and speed, as well as on the same voyage (from Liverpool to Bombay and back), may be thus given:

CONSUMPTION OF COAL PER 1,000 TONS CARRIED PER 1,000 KNOTS.

Displacement Performance.		Deadweight Performance.	
Result.	Saving in favor of Triple.	Result.	Saving in favor of Triple.
tons.	per cent.	tons.	per cent.
18.892		29.555	
	22.72		21.65
14.598		23.156	

Several other instances are given, but as they are like that above included in the general summary and result, it is needless to quote more.—*Engineering*.

CHEAP EXCURSION TO CHICAGO.

The combined societies of the Catholic benevolent associations and German Warriors of Cleveland, have arranged with the Lake Shore & Michigan Southern railway to give a grand excursion to Chicago on Saturday, September 3d. Special train will leave the Union depot, Cleveland, at 7:30 p. m., arriving at Chicago next morning about 8 a. m. Tickets for the round trip have been placed on sale at the very low rate of $5.00. Tickets will be good going on special train of above date only, and returning until Saturday, September 10th, inclusive, on train leaving Chicago every morning at 8:50 a. m. Tickets can be purchased from members of the different societies. See posters and small bills. All should avail themselves of this rare opportunity to visit the great city of the west, as this will positively be the only excursion to Chicago this season.

ENRIGHT & HARDY'S

Tug Line, Pathfinder and S. J. Christian.

THE TWOLARGE ST

Office 19, Madison St., Toledo, O.

LAKE SHORE & MICHIGAN SOUTHERN

Commencing Monday, May 16, 1887. The time given in the figures below is the new standard (Ninetieth meridian) time, which is thirty-three minutes slower than Cleveland time proper.

Eastward.	Arrive	Depart.
No 4, Fast Limited Express	*2 55 A M	*2 55 A M
No 8, N. Y. B & A Express	*8 30 A M	*3 55 A M
No 26, Elyria Accommodation	†7 45 A M	
No 24, Buffalo Ac'm via Sandusky	†10 05 A M	†10 15 A M
No 24, Toledo Accom via Norwalk	†10 05 A M	†10 15 A M
No. 10, New York & Boston, "Flyer"		*11 35 A M
No 12, N Y & B Fast Express	*2 20 P M	2* 45 P M
No 2, Night Ex via Norwalk	9 40 P M	†10 00 P M
No 22, Night Ex via Sandusky	†9 40 P M	
No 26, Conneaut Accommodation	†4 25 P M	

Westward.	Arrive.	Depart.
No 1, Fast Limited Express	*12 15 A M	*12 15 A M
No. 23, Cleveland Express	*2 15 A M	
No 3, Chicago Express via "	§5 20 A M	5 35 A M
No 25, Mich Accom Norwalk		†5 35 A M
No 21, Toledo Ex via Norwalk	†12 50 P M	†3 20 P M
No 5, St Louis Ex via Sandusky	*10 50 A M	*10 55 A M
No 9, Chi Pac Ex via Norwalk	•6 15 P M	*6 40 P M
No 31, Elyria ac to Elyria only		†4 30 P M
No 27, Conneaut Accommodation	†8 10 A M	

Sunday train for Nottingham—Depart 8:15 a. m. and 1:45 p. m.; returning, leave Nottingham at 8:50 a. m. and 3:45 p. m.

Reference marks—* Daily, † daily, except Sunday, § daily, except Monday.

A local Cleveland and New York sleeper, also sleeper for Boston, and dining car daily on No. 10, leaving Cleveland at 11 35 A M.; arrive Grand Central depot, New York, 7 30 a. m.

For full information as to trains and connections apply at the Union ticket office, corner Bank and Superior streets, under Mercantile Bank.

M. E GAUL, City Passenger Agent.

A. J SMITH, Gen'l Pass. Agt., Lake Shore Block

ROBERT E. HILLS,

57 & 59 North Wells St., Chicago, Ill.
Telephone 3321.

STEAM FITTING AND HEATING,

Wrought Iron Pipe & Fittings

ENGINEER'S SUPPLIES.

General Jobbing Work Done Promptly.

Also, Proprietor of North Side Brass Works.

CAPT. GEO. A. SIMPSON,

Compass Adjuster,

COMPASSES, BAROMETERS, PATENT LOGS AND MARINE GLASSES REPAIRED,

Schooners can have their Compasses Adjusted for Local Attraction at the time of repairs by stating how much they are out on East or West Courses, and which way it leads, North or South of above Courses

161 River St., Cleveland, O.

DETROIT & CLEVELAND.

STEAM NAVIGATION CO.,

BETWEEN

CLEVELAND & DETROIT,

MACKINAC ISLAND, ST. IGNACE,
ALPENA, SAND BEACH,
PORT HURON, ST. CLAIR,
OAKLAND HOUSE, MARINE CITY

Special Sunday Trips

BETWEEN CLEVELAND AND DETROIT
DURING SUMMER MONTHS.

For full information, rates, tickets, etc., apply to E. B. WHITCOMB, Gen. Pasgr. Agt., Detroit, Mich, T. F. NEWMAN, General Agt, Cleveland, O.

Travelers Information Bureau,

224 Bank St., CLEVELAND O.

Where may also be found a full line of ocean tickets

THREE HOURS LAKE RIDE EVERY EVENING Except Sunday. Cleveland Lighterage Co.'s steamer

AMERICAN EAGLE,

Leaves foot of Superior street at 7:30 p. m., returning at 10:30, giving three hours on Lake Erie. Fare, only 25 cents. No liquors allowed on board. Music for dancing by Prof. Salas Orchestra.

H. R. ROGERS Manager. T. F NEWMAN, Pres't.

Special lake rides every Saturday afternoon at 3:30. Fare 25 cents.

FOR SALE,

A POWERFUL RIVER AND HARBOR TUG.

Length 95 feet, breadth 17 feet, depth 9 feet, draws 9 feet. New tonnage 40, old 81. Engine 22x24. She is allowed 90 pounds of steam. Has new main valve, new throttle valve, new eccentrics, two new tow posts, four new timber heads, one new metallic life boat and new wheel, ironed all around for work in ice. Cabin, pilot house and engine room remodeled. Can carry sixty (60) tons fuel, has forty life preservers, water-tight bulkheads, and is allowed to carry passengers. She rates A2, valued in Lloyd's at $10,000, and is warranted in first-class shape. Address MARINE RECORD OFFICE,

STEAMBARGE FOR SALE.

This is one of the finest steambarges on the lakes, and was built in 1884. She is in good condition in every respect, serviceable, easy to load and unload, and a great favorite. She can not be duplicated for the same money. Her dimensions are 131 feet keel, 143 feet over all, 23.4 feet beam, 8.4 feet depth of hold, and is classed A1½ by Inland Lloyds. She carries two masts. Her carrying capacity is 400 to 425 tons or 14,000 bushels of wheat, or about 240,000 feet of lumber on a draft of 9 feet 9 inches. Her engine is high pressure 18x20 and her boiler 6½x12 feet of 7-16 Otis steel. Speed 10 miles loaded or 11¼ light.

Address MARINE RECORD, Cleveland, Ohio.

AN IRON MINE FOR SALE.

This mine is on the shores of Lake Huron, close to a good harbor. First-class ore, assayed 70 per cent pure iron. This ore is said by experts to be much better than Lake Superior iron ore, and the only ore of its kind so far discovered on this continent capable of making Bessemer steel. Will sell outright, on shares or a royalty. Specimens of ore furnished and inspection of mine solicited.

Also, two silver mines on Lake Superior, close to a good harbor. Specimens furnished. Apply to MARINE RECORD, Cleveland, Ohio.

WANTED.

We have a customer who wants to purchase a small steambarge. Address, stating price and terms, THE MARINE RECORD, Cleveland, O.

H. D. COFFINBERRY, PRES'T. ROBERT WALLACE, VICE PRES'T. WM. M. FITCH SEC'Y.

THE CLEVELAND SHIP-BUILDING COMPANY,

Detroit and Center Streets, Cleveland, Ohio,

IRON SHIPS,

Marine and Stationary

ENGINES AND BOILERS,

Blowing Engines and Steam Hammers,

AND MILL GEARING AND CASTINGS.

We take pleasure in announcing that we have purchased the property, business and good-will of the Cuyahoga Steam Furnace Company, and will add to these works, so long and favorably known, a first-class Iron Ship-building Department, with sufficient room and all modern facilities for building two large vessels at the same time, and a Boiler Shop with most approved tools for large work, including Tweddell's Hydraulic Plant for flanging, riveting, etc.

We have associated with us Messrs. H. D. Coffinberry and Robert Wallace, late of the Globe Ship-building Co., and the Globe Iron Works, and Wm. M. Fitch, late of the Winslow Line of Steamers. We have made the following appointments: Mr. O. N. Steele, Assistant Superintendent; Mr. Thomas W. Bristow, late foreman of Wyandotte Ship Yard, Superintendent of Ship Yard; Mr. Quincy Miller, Superintendent of Boiler Shop; Mr. John Stoney, Superintendent of Foundry, and Mr. Jas. C. Wallace, Draughtsman.

We purpose building Iron and Steel Vessels of all descriptions, Marine and Stationary Engines and Boilers, Blowing Engines, Steam Helve Hammers and such other work as our large assortment of patterns eminently qualify us to build, at a minimum price.

Your patronage is solicited, and we trust that the excellence of our work, with fair dealing and strict attention to business, will secure its continuance.

THE CLEVELAND SHIP-BUILDING COMPANY.

SIGNAL LAMPS

For Steamers and Sailing Vessels.

PATENT FLUTED LENS AND PERFECT COLORS.

GET THE BEST AND AVOID COLLISIONS.

These Lamps give a more brillant light than any Signal Lamp now in use.

They have been adopted by the principal Ocean and Lake Steamers

Over Ten Thousand Now in Use.

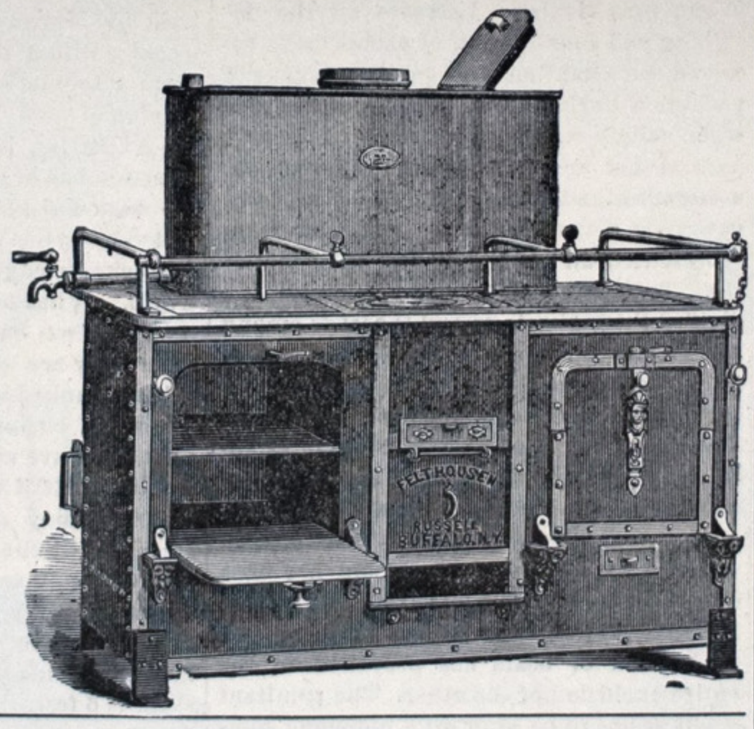
WE ALSO MANUFACTURE THE CELEBRATED

French Wrought Iron Ranges and Broilers of all Sizes for Steamers and Hotels.

Steamboat Copper, Tin, and Sheet Iron Workers.

FELTHOUSEN & RUSSELL,

139 & 141 MAIN ST., BUFFALO, N. Y.



Cleveland Dry Dock Co,

Shipbuilding, Drydocking, Repairing and Spar Making.

CLEVELAND, OHIO.

MARINE REPORTER AT THE STRAITS.

Reports of Passing Vessels a Specialty.

Messages Delivered to Passing Vessels Day or Night, Weather Permitting.

MY ICE REPORTS MAY BE RELIED ON.

SEVENTEEN YEARS EXPERIENCE.

The Patronage of the Marine Public Respectfully Requested--Charges Reasonable.

F. J. STIMPSON, MACKINAW CITY MICH.

Established in 1859.

HENRY LEOPOLD.

Manufacturer and Dealer in all kinds of fine and plain

FURNITURE & UPHOLSTERY,

And Manufacturer of Counters, Shelving, Bank and Bar-room Fixtures.

Mattrasses and Vessel Furniture

A SPECIALTY.

Warerooms 798 and 800 Lorain-st., near Fulton. Factory 10 Willet-st.

CLEVELAND, OHIO.

WM. H. RADCLIFFE,

Shipbuilder and General Repairing.

OLD RIVER BED, Ft. OF TAYLOR St.,

CLEVELAND, O.

WILLARD & FILLEY,

[SUCCESSORS TO R. L. WILLARD]

SHIP AND ORNAMENTAL PAINTERS.

DEALERS IN

LEAD, OIL, MIXED PAINTS, GLASS, PUTTY, ETC.

All Kinds of Steamboat and Vessel Work a Specialty.

FINISHED LIBERTY CAPS FOR STEAMERS ALWAYS ON HAND.

57 Main Sreet, cor. Elm, Cleveland, Ohio.

Scott's New Coast Pilot

Corrected for Additions and Changes to the Opening of Navigation in 1887,)

IS SOLD BY

SHIP CHANDLERS

AND BY THE PUBLISHER,

GEORGE SCOTT,

AT 162 LARNED E., ST., DETROIT, MICH

WARD AND JACKSON,

SHIPSMITHS,

All Kind of Forgings, Bolts and Truss Rods for Building.

49 Main-st Cleveland

WINDLASS FOR SALE.

The undersigned have a Hadfield Patent windlass or a one and three-eighths inch bar chain for sale cheap.

JOHNSON & BATES,
927 Erie St., Racine, Wis.

DETROIT BOAT WORKS.

BUILDERS OF

STEAM AND SAIL YACHTS, RACING SHELLS AND HUNTING CANOES

SOLE MANUFACTURERS OF

Clark's Patent Metallic Life Rafts and Wooden Life Boats.

YAWL AND ROW BOATS of all sizes in stock. Steam and Hand Steering Wheels made to order. SHOPS, FOOT DEQUINDRE ST., DETROIT, MICH. TELEPHONE No. 1154.

Moiles Tug Line.

Sault Ste. Marie, Mich.

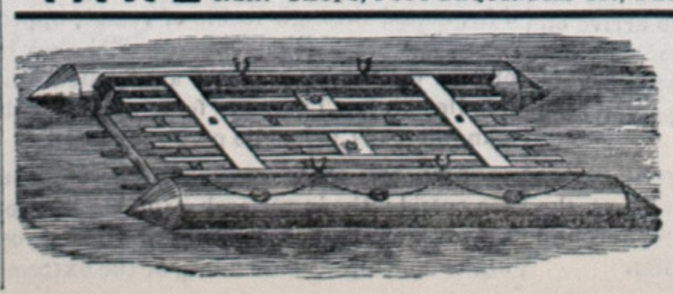
Office on WATER ST., 5th door from Canal Park.

Tugs Tom Dowling, Frank Tracy and Laura Gibbs.

All kinds of Tug Work Done with Promptness and Dispatch. Tugs and Lighters Always in Readiness.

RAFT TOWING A SPECIALTY.

Correspondence Solicited.



THOS. DREIN & SON

BUILDERS OF

METALLIC LIFE BOATS

and LIFE RAFTS of all classes Government and Pleasure Boats of Wood. Block Cork Life Preservers. Sole manufacturer of Capt. JONATHAN CONE'S celebrated

Patent Life Rafts

Tatnall-st and Railroad, Wilmington Del.

Marine Record.

Published Every Thursday at 144 Superior Street, [Leader Building] Cleveland, O.

A. A. POMEROY, EDITOR AND PROP'

BRANCH OFFICE:
252 South Water Street, Chicago, Illinois,
THOMAS WILLIAMS, Associate Editor.

TERMS OF SUBSCRIPTION:
One year, postage paid.....$2.00
Six months, postage paid..... 1.00
Invariably in advance.

THE MARINE RECORD can be found for sale by the following news dealers:

CLEVELAND, O.—G. F. Bowman, corner of Pearl and Detroit Streets.

Evans & Van Epps. Superior street, Cleveland.

R. A. Castner, 254 Detroit street, Cleveland.

W. A. Ford, corner of Bridge and Pearl streets.

ASHTABULA HARBOR, O.—C. Large.

CHICAGO, ILL.—Joseph Gray, 9 West Randolph Street.

CHICAGO, ILL.—H. B. Hansen, 33 West Randolph Street.

BUFFALO, N. Y.—Miss McCabe, Elk Street, near Ohio.

Charles McCready & Co., No. 14 E Seneca St.

Mrs. Mary Jannigan, on Michigan St. Swing Bridge.

DETROIT, MICH.—N F. Stewart, Ft. of Woodward Av.

STAR ISLAND, ST. CLAIR FLATS, MICH—McNiff & Son.

DULUTH, MINN.—C. F. Johnson, 323 West Superior Street.

MARQUETTE, MICH.—J. A. Vannier.

ESCANABA, MICH.—Wm. Godley.

ESCANABA, MICH.—George Preston.

SARNIA, ONT.—D. McMasters.

OWEN SOUND, ONT.—J. Sharpe, Jr.

KINGSTON, ONT.—F. Nisbet, corner Brook and Wellington Streets.

Subscribers and others are respectfully invited to use the columns of the MARINE RECORD for the discussion of pertinent topics.

Entered at the Post Office at Cleveland as second-class mail matter.

CLEVELAND, O., THURSDAY, AUGUST 25.

THE AMERICAN YACHT.

In the last report of Captain Jarvis Patten, late commissioner of navigation, is quite an exhaustive treatise on the American yacht, which at this time will be read with special interest. Captain Patten, while deprecating the depressed condition of the merchant marine of the country, takes great pride in pointing to our fleet of yachts as at the head of the national pleasure squadrons of the world. While the merchant marine during the past decade has hardly kept pace with the general advance, nothing, perhaps, in the nautical line is so indicative of the general prosperity as the wonderful development of the yachting interest. The capital invested in a fleet devoted mainly to the pursuit of pleasure during a few months of the year is already so enormous as to deserve consideration as an important feature of the maritime growth of the country.

Until about 1870, the New York yacht club was the only one in which any pretensions were made to own and sail first-class yachts. Since that time the growth of the different clubs that have sprung into existence, from year to year, has been something remarkable. In 1870, some 20 steamers, 100 schooner yachts, and about 300 sloops, in all some 400 vessels, made up the yachting list of the Atlantic seaboard, while to-day 150 steam yachts, 250 schooners, and 400 sloops, with a host of small craft, neaaly 2,000 in all, join the annual regattas in search of "cups." The international races of the past ten years have excited a wide spread and general interest in the matter of yacht designing and construction; so much, indeed, that the main questions at issue have become plain to every one, and it is not unreasonable to suppose that this interest will continue to grow until the fleet of pleasure yachts, already large, rivals in numbers that of our foreigh going merchant fleet.

The New York yacht club was organized in 1844, the first in the country, and from that time until 1870 there were just a dozen in all, but during the past fifteen years their number has increased to sixty. There was, however, always a large fleet of small craft sailed by their individual owners, who, as the yachting subject gained in importance, joined together and formed yacht clubs. Concerted action of this kind has brought about the results which the international contests of the past ten years have clearly elucidated. A marked improvement is noticed in yacht designing, construction, and rig, the drafting of the sail and spar plans, and in the balancing of the vessel. Until the subject received this general attention these details were left entirely to the builders, riggers, and sail makers, their productions being the aggregate result of former precedent, a general rule of thumb, and a good deal of blundering and guess work construction, and while the yacht of to day is not entirely a thing of engineering calculations, her construction approaches more nearly an exact science than before the time when the clubs taking the matter seriously in hand, determined to produce in a good sea going craft a yacht of unrivaled speed and beauty. As a result we see not only a marked improvement in the appearance but also in the performance of the American yacht under all kinds of circumstances and weather.

The ideas embodied in foreign models have all been tried and tested, those features alone being retained which were found conducive to a material advantage. This process of evolution, rapid as it has been, has already produced a distinct type of vessel known as the American yacht, a vessel peculiarly adapted to the requirements of our large bays and shallow waters, but combining in her design and rig some of the best features of the English boat. The shallow skimming dish, our original conception of a fast sailor, has had to yield in many points to modern innovations until the Yankee boat of to-day presents the appearance of a happy mean between the broad and shallow boat of earlier years and the deep cutter, that continues to be the favorite vessel with English yachtsmen. Moderate beam and increased depth seem to be the present tendency of the American yacht. In minor details, however, the results of study and a thorough investigation of the principles and forces at work are not less apparent. In ballasting, scrap iron and paving stones have been replaced by lead and iron keels, while inside ballast is cast in forms designed especially to fit the frames. The center of gravity is thus lowered, which enables the boat to carry with safety a much larger spread of canvas than before. For standing rigging, wire is used in place of rope, giving increased stability and strength to the masts, and calculated to meet the strains incident to greater pressure. Even the canvas for first class yachts is now a special manufacture, being lighter and made in narrower strips than that formerly used.

Among the clubs the spirit of emulation has been strong. Large regattas have been held annually in numbers, at which the best craft of different clubs have met each other in generous rivalry. Lectures on the designing and construction of yachts have received the attention and encouragement of yachtmen during those periods of the year when sailing was impracticable. It is only natural that under such circumstances, investigation and discussion should lead to a variety of views as to what particular form represented all that was best in model or rig. This question as regards model has divided the enthusiasts and theorists among yachting men into two schools, the respective advocates of the cutter and sloop. The strong adherence to the former type in English waters had doubtless the effect of establishing a strong precedent in favor of this class, and for some years the war of opinion waged strong between the advocates of each until every imaginable extreme has been submitted to at least a fair trial, and it may be fairly said that neither extreme of draft or breadth of beam has prevailed to the entire exclusion of the other. The resultant yacht seems to be after all a judicious combination of the best features of both. Out of all the discussion, trial, experiment, and use the fact seems at all events to have become established beyond dispute that the center board craft, either moderate or extreme in breadth, is, notwithstanding all that has been said to the contrary, a good seagoing boat, and the old idea identifying the so-called American skimming dish with a death trap is exploded; numerous trips across the Atlantic and a number around the Horn to the Pacific coast of the United States having placed the seaworthiness of a properly constructed center board vessel beyond question.

TOLEDO.

There has been at work this week a force on the straight channel that is expected to remove 75,000 yards of dirt per month. Three new tugs, belonging to Messrs, St. John, French, and Rooney, have arrived. Mr. St. John is at present negotiating for another tug which he expects to arrive on Saturday. Rooney's tug will arrive from Bay City. There will then be at work on the channel six tugs, three dredges and nine scows, with a full crew to each.

The schooner J. B. Merrill, grain laden for Buffalo, went aground abreast of the lake shore elevators. She is hard aground and it will be difficult to relieve her.

LAUNCH OF THE STEAMER AURORA.

The fine large steamer AURORA was launched Tuesday at Murphy & Miller's shipyard in the presence of about four thousand people. Dredging had been going on for some time in order to provide water sufficient to float her, notwit standing which her extra heavy build caused her to find bottom at the stern after her launch, and she was pulled away by tugs. The launch was a beautiful one, and her deck load of visitors hugely enjoyed the sensation of the movement. The AURORA'S cost is placed at $160,000, and she is owned by Mr. John Corrigan, Captain Wm. Mack and Mr. X C. Scott. Captain Mack, under whose direct supervision, as to details, the AURORA was built, has demonstrated that he has some original and good ideas as to construction, and he deserves much credit for the energy and industry with which he has followed them out. Captain Mack will sail her, Mat Thomas will go as chief engineer, and C. E. Jackson assistant. Mr. Thomas will have two assistants, but we have not learned the name of the other. The quarters of officers and crew are large and well ventilated.

In the fit out of the AURORA by Upson, Walton & Co., we find everything that goes to make up the most complete and at the same time modern improvement. The American Ship Windlass Co. provide a Providence steam windlass, and steam capstans; Williamson Bros., of Philadelphia, a steam steerer; an electric light plant to illuminate the decks; Felthousen & Russel, signal lamps; and everything to insure convenience and dispatch is found on this steamer.

The AURORA is designed for the grain and ore trade, and is one of the best samples of marine architecture that has ever been put afloat on the lakes. She is extra strong built and has the requirements to take a star with her A1 classification. The builders, Messrs. Murphy & Miller, may take an honest pride in this great steamboat, and Messrs. John Corrigan and Captain William Mack may have a high consciousness of satisfaction in being the owners of this really fine, well-built boat. We do not desire to detract any thing from other shipbuilders in Cleveland or other points on the lakes, but must say that no finer, or better built boat ever appeared in our freighting business. The new AURORA is, without exception, the climax of wooden shipbuilding, and we take this occasion to congratulate both owners and builders. This being the first steamboat built by Murphy & Miller, they have neglected nothing that would conduce to give them a reputation as good builders. The opinion of many experts has assured us that the AURORA is one of the best, and the assertion has been made that she is one of the best finished steamboats on the lakes, which is saying very much, as the lake craft are acknowledged to be the best in the world. It has been said in England that on the lakes we build vessels by the foot and when they are long enough they are sawed off and planked up. When English builders know our customs in shipbuilding better they will have more regard for our systems.

The AURORA has grand dimensions, in fact, we may say that she is the largest steamer with the exception of the steel steamship Owego that has ever been launched on the lakes. Her length of keel is 293 feet, over all 310 feet, breadth of beam 41 feet 8 inches, moulded depth 24 feet 6 inches; her sheer is 6 feet, the after depth being 30 feet 6 inches.

The frames are 6 in. flitch, double, with extra long floors, from bilge to bilge without a break, 16 in. at the seat and 17 in. at bilge, 9 in. at top height. The keel is 9 by 16 in.; main keelsons, 16 by 16 in.; sister keelsons, 16 by 16 in., 12 floor keelsons, 6 on each side, 15 by 16 in., bolted through every frame with five 1 in. bolts; the frames are 21 in. centers. The keelsons are bolted through into keel with 1¼, and garboard with 1¼ in. bolts; the rider keelsons are 17 by 18 in., bolted clear through with 1¼ in. iron. Garboard is 8 inch, next 7, and bottom all 6 inch white oak. Top sides are 5 in., except three strakes of 7 in. let into frames. The ceiling is all 6 in. from last big keelson. There are five strakes commencing with 11 in. and diminishing to 6 in. at ceiling, going up 6 in. to main deck, then 7 strakes 7 in. thick are notched into frames 1 in., all edge-bolted, 2 bolts between frames, with 1 in. iron shelf pieces under main deck, 6 in. by 3 ft., bolted through inside of vessel; upper shelf under spar deck the same. The deck is of 3 in. white pine. There are 8 hatches to handle cargo. There are four masts, with standing gaffs, to handle cargo; no sails.

There are three steel arches, two on the outside, the lower arch catching hold of the extreme corner forward and going up high amidships, then ending at the extreme lower corner aft. This arch is of steel, 1 in. thick and 12 in wide; the length is 310 ft. The next is 10 ft. above the first, and is of the same size. A steel cord catches the stem on one side and goes around the vessel without a break to the stem again on the other side; this steel cord is 1 by 12 in. and is 635 ft long. The other arch is on the inside, abreas f the first one, and is put in so that bolts (1⅛ in.) go through outside plank, outside arch, frames, ceiling inside and through this inside arch, thus fastening by riveting together the whole mass; there are 4 bolts in every frame, through and through. All fastening is the best 1 in. iron. Batten planks are bolted on with 4 bolts and 2 spikes in every frame, and top sides with 2 bolts and 2 spikes in every one. The top strake is 7½ and 8 in.

There are 1,300,000 ft. of lumber and 350 tons of iron, furnished by Bassett & Presley, used in the construction of this vessel. Her model combines great displacement with fine ends.

The engines are triple compound and were built by the Cleveland Shipbuilding Co. and are direct acting, jet condensing type, and are expected to work up to 1,800 indicated horse power. The three cylinders are 24, 38 and 61 in. diameter, respectively, having a common streke of 42 in. The bed plate is of deep box pattern, cast in two parts, with the joint running athwartship, and carries the five journals of the crank shaft, which is in five pieces with solid coupling between the intermediate and low pressure engines. The journals on this shaft are 12 in. in diameter. The three crank pins are of mild steel, 11½ in. in diameter, with 10 in. bearings. The three cranks are all double throw, and are made of forged iron with straps, gibbs and keys in each end. The slides are of mild steel, bolted to columns in the center line of the engine, fore and aft, except the forward slide of the intermediate engine, which is removed from the column far enough to admit the placing of the link and connection between the slide and the column. The links for the first and third cylinders are placed outside the columns. The eight columns carrying the cylinders are of box section cast in pairs and bolted together through the fore-and-aft girts. The small or high pressure cylinder is fitted with a piston valve, and the other two cylinders—the intermediate and low pressure—with slide valves, all being very easy of access for examination and repairs. The air pump is of the ordinary single acting bucket arrangement, 28 in. in diameter and 17 in. stroke, and is so planned that any valve may be reached by taking off its cover. The condenser is of cast iron, 35 in. in diameter and fitted with jet spray.

The propeller is four bladed and is 13 ft. diameter and 17¼ ft. lead made by Trout.

The engine is supplied with steam from two boilers of the Scotch type built by M. Riter of Buffalo. Each boiler is 12 ft. diameter and 14 ft. long, and has three 40 in. furnaces. They are expected to carry a working pressure of 165 lbs of steam.

LAKE FREIGHTS.

Tonnage at all ports on the lakes is scarce and in demand. Grain freights out of Chicago show an advance of ¼c for the week, and lumber freights, owing to the scarcity of tonnage, show an advancing tendency. Coal and ore freights also give promise of an advance and the demand is steady and strong.

ORE.	
Escanaba to Chicago	1.00
Escanaba to Ohio ports	1.55@1.60
Marquette to Ohio ports	1.90
Ashland to Ohio ports	2.40
Two Harbors to Ohio ports	2.50
GRAIN.	
Wheat, Duluth to Buffalo	5½c
Corn, Chicago to Buffalo	3⅞c
Wheat, Chicago to Buffalo	3⅛c
Wheat, Milwaukee to Buffalo	3¾c
Wheat, Detroit to Buffalo	2¾c
COAL.	
Buffalo to Milwaukee	1.25
Buffalo to Chicago	1.25
Buffalo to Duluth	75c
Cleveland to Milwaukee	1.00
Cleveland to Chicago	1.20
Cleveland to Duluth	85
Erie to Duluth	1.00
Erie to Chicago	1.10
Erie to Milwaukve	1.00
Erie to Escauaba	70
Sandusky to Ashland	1.00
Sandusky to Washbu rn	1.00
Sandusky to Milwauk ee	1.00
Saudusky to Racine	1.10
Toledo to Ashland	1.00
Toledo to Washbu rn	1.00
Toledo to Duluth	1.00
Toledo to Milwauke	1.00
LUMBER.	
Bay City to Tonawanda	$2.50
Bay City to Ohio ports	2.25
Saginaw to Tonawanda	2.62½
Saginaw to Ohio ports	2.37½

LORAIN.

The steambarge P. J. Walters has been raised partially and was towed about a mile nearer shore on the 23d.

ACTIVITY OF GOVERNMENT ENGINEERS.

The annual reports of engineers in charge of the work of improving the rivers and harbors of the country seem to be more generally interesting this year than they have been for several years, and the collection and presentation of commercial statistics has been done in a more complete and efficient manner than is the usual custom. The Michigan reports are always interesting for the reason that the waterways of the state are more important than those credited to any other one state in the union. General Poe's statements in reference to the St. Mary's Falls canal project, and the enormous traffic of the canal, were more written about by the correspondents at the capital than any report not relating to works in the field in which the papers represented by these correspondents are published. The points made by General Poe with reference to the economy of working under large appropriations for an important work was also quite extensively used as a text by those who make a study of the subject of river and harbor improvement.

From the far south there have also been received most intelligent and instructive reports, showing the value of the work, and the effect upon the all-absorbing question of transportation. Major Damrell, the engineer at Mobile, who has under his charge some of the most important rivers in the state of Mississippi, furnishes abundant testimony to show that the government is solving the freight problem in this locality by improving the waterways of that section. A great deal of money has been expended on Mobile harbor, but the benefits to commerce are worth the outlay. Large ships now go right to the wharves, two lines of steamers to Europe are in operation, the harbor is on a par with New Orleans and other favored harbors of the south, grain can be handled in bulk, the rate on cotton to Liverpool has been reduced one-quarter cent per pound, and Mobile has been made a port for a considerable back country. Major Damrell shows that the improvement of Pearl river in Mississippi has had such an effect on freights in that state that where it formerly cost $4.80 to ship a bale of cotton to New Orleans, the rate now is only $1. It used to cost $2 to ship a barrel of flour to New Orleans from several points in the same locality, but since Pearl river has been improved it costs only fifty cents. His report is full of just such instances, and the saving in freights to the people of that state in a year is remarkable since the rivers have been improved. Even on short streams there has been a surprising revolution. In some cases the actual commerce of the rivers has not yet shown marked increase, but the fact that the rivers are in navigable condition, and boats can enter them, stands as a menace to the railroads that have heretofore enjoyed a monopoly of the transportation business in that section. Such facts as these, stated officially by one of the United States engineers, are well calculated to open the eyes of congressmen to the necessity of voting regular and liberal appropriations to the rivers and harbors that are reported capable of being improved so as to afford relief by becoming competitors with the railways.

Reports other than Major Damrell's are full of similar illustrations. Major Ernst, the brilliant engineer at Galveston, and who was formerly at St. Louis in charge of a section of the great Mississippi river, shows that Galveston now has an annual trade of $78,000,000 with the greatest prospects for the future, and that the government is in duty bound to vote adequate appropriations. The Oregon reports tell what has been done out in that remote section, and the average reader knows the untold benefits that have accrued to New York and Boston since those harbors have been properly improved. And right here it is pertinent to remark that it comes with bad grace from the New York and Boston press to oppose appropriations for Michigan waterways, the Mississippi river, and for other important uncompleted works in the great and growing west, when it is remembered how many millions Uncle Sam has profitably spent on the New York and Boston harbors. There is no estimating the benefits to New York commerce since the Hell Gate improvements were completed.

Probably the press of the east is prompted to bitterly oppose Mississippi river improvement from the fact that the father of waters is taking too much grain out by way of New Orleans; but that is no reason why the balance of the country should suffer because New York and Boston find competition. This competition and the opening up of a new route is a blessing to the people tributary to the Mississippi, and in the winter season, when the northwestern lake routes are frozen up, the Mississippi is usually open below St. Louis to the Gulf and if the trunk line railways put rates up too high the railways which feed St. Louis and Kansas City pour their grain and other produce into St. Louis, Kansas City, and even Memphis, to be transported by barge lines to New Orleans for export. Thus is the mighty Mississippi an important factor, even though the river traffic is as yet small compared with the amount of stuff carried east by the trunk lines. It is, though, to the Mississippi Valley in a measure what the great lake routes are to the northwest—a check upon the railroads; and the Mississippi barge system has revolutionized rates in that part of the United States.

It will be remembered that the bulk of the vote against the river and harbor bills in the past few years has come from New England and Middle State congressmen. Judge Holman, of Indiana, is one of the few prominent western men who systematically opposes these measures. In the last congress some of the Hennepin canal advocates got mad and fought the bill out of spite, but there was an overwhelming sentiment i the west and south for the bill.

The friends of the Mississippi river and its navigable tributaries and those of the lake systems in the northwest are generally allies in congress, and their interests demand that they continue to be allies.

There is some curiosity manifested to know who will be Michigan's member on the next house committee on rivers and harbors. In the last congress Hon. E. C. Carleton ably represented Michigan on this committee and worked faithfully and intelligently for the state's interest, giving satisfaction also to his colleagues, and retiring with a full sense of the responsible position to which he had been assigned. Of the old committee nine of the members will be in the next congress, viz.: Willis, of Kentucky; Murphy, Iowa; Gibson, West Virginia; Stewart, Texas; Carleton, Michigan; Stone, Massachusetts; Burleigh, New York, and Markham, California. It is conceded that Blanchard, of Louisiana, will be chairman, since Willis, of Kentucky, is out. There will be at any rate seven experienced men on the committee with the possible exception of Glover, of Missouri, who has not taken as lively an interest in the work of the committee as he might have done. The others are Blanchard, Jones, of Alabama, Catchings, of Mississippi, Henderson, of Illinois, Bayne, Pennsylvania, and Grosvenor, of Ohio. The wishes of Mr. Whiting, the successor of Mr. Carleton, are not known. If he desires to go on the committee he will probably get the place. It may be that he prefers some other committee. In that event it is hard to say who of the Michigan Democrats will take the place. Judge Chipman would hardly care for it. Mr. Tarsney is satisfied on commerce and labor, and Mr. Fisher will probably get a chairmanship. If none of the Democrats from Michigan seek the place Mr. Moffatt might like to try his hand, especially as he is an earnest friend of the waterways and has given the subject much study and research. In addition to the regular appropriations for Michigan rivers and harbors there is another important matter to be watched closely next winter, and that is the proposition to buy the Portage lake canal. A government board of engineers has already reported favorably on this matter and provision was made for its purchase in the river and harbor bill which failed last spring. The necessity of having a wide awake Michigan man on the next committee is quite apparent, and the members will no doubt agree upon a suitable man to recommend for this work. On account of the failure of this year's bill the next one is apt to be a large one in the aggregate amount of appropriations.

[*Around the Lakes Continued from 1st Page.*

SAND BEACH.

Special to the Marine Record.

The steamer D. C. Whitney, owned by David Whitney, of Detroit, and valued at $100,000, is on the rocks and in great danger of going to pieces. She is laden with iron ore and bound from Ashland to Cleveland. While coming down Lake Huron with the schooner Ashland in tow, she got out of her course and brought up on Hardwood reef, about one mile this side of Port Hope. News of this disaster reached here at 3 o'clock Saturday morning, and the tug John Gregory with the life saving crew aboard at once started to the rescue. They found both vessels lying in four feet of water. The Ashland was released and towed here. She is but slightly damaged. The Whitney could not be released. She is on the rocks full one-half of her length, and is pounding badly. Her forefoot has been twisted off and she is leaking so that her pumps are kept in constant motion. The wind is blowing hard from the northwest and the sea is rising rapidly. Unless the storm moderates the chances are that the steamer will not last. She was built in 1882, and measures 1,013 tons.

While we have had no severe storms number of vessels and barges have been in the harbor for refuge the last week, among them the Salina and three consorts, tugs Geo. B. Dickson, F. A. Folger, and Torrent, steamers Schoolcraft, Gettysburg, H. C. Schnoor and one barge, Canisteo and two barges, and schooners Aunt Ruth and Ino.

A gang of raftsmen have been here for the past week, busily engaged in re-rafting a lot of logs, lost on Point au Barque by the steamer Schoolcraft, a little over a week ago.

LUFF.

DULUTH.

Tug Brower left the scene of the wreck of propeller A. Booth Saturday, having in tow the Booth, which had been raised by Captain J. G. Falcon, of Chicago. The Booth was raised by casks and was seemingly well enough protected by them to enable her to reach Duluth in safety. About twenty miles this side of Grand Marais, a northeaster struck her and after four casks had been torn away, she filled with water, keeled over and sank in twenty fathoms of water where she probably cannot be raised. Captain Falcon had been at work on the wreck about two months, and believed he would be successful in bringing her to the docks here at Duluth. The Booth was worth $14,000.

AHOY! MARINERS!

The beacon light, which guides you safely in the harbor of pecuniary advantage is the Boston Dry Goods firm of *Kohn & Co.*, 213 Detroit st., near corner Pearl st., Cleveland, O., established since 1866 in this city, informing you of our specialty in supplying vessels with ☞ *Comfortables, Blankets, Table linen, etc* and that we *sew to order* at *shortest notice* ☜ *Sheets, Pillow cases*, or any necessary equipments for bedding.

☞ We are also pleased to inform you that we are the *only* manufacturers in this city who retail direct to consumers, none but *our own genuine home-made* ☞ *Flannel Shirts, Waterproof Shirts, Scarlet Flannel Undershirts* and *Drawers, Overalls, Jean Pants*, etc., or ☞ *make them to order* ☜ for the same price we sell them ready-made. ☞ All our Shirts are 52 inch wide, 36-inch long, extraordinarily well sewed. ☜ The *Custom Cutter*, associated with our merchant tailoring department offers to make *Gents' finest Cassimere, Broadcloth Suits*, in the *latest style*, guaranteeing the best fit and fine workmanship ☞ *for $8 less* ☜ than any other merchant tailor, because he has *no Rent to pay, does his own cutting*, and wants *to advertise himself*. Kohn & Co., 213 Detroit st., near corner Pearl, Cleveland, O.

To close the Estate

OF THE LATE

SAMUEL L. WATSON

THE FOLLOWING VESSELS

Are Offered for Sale.

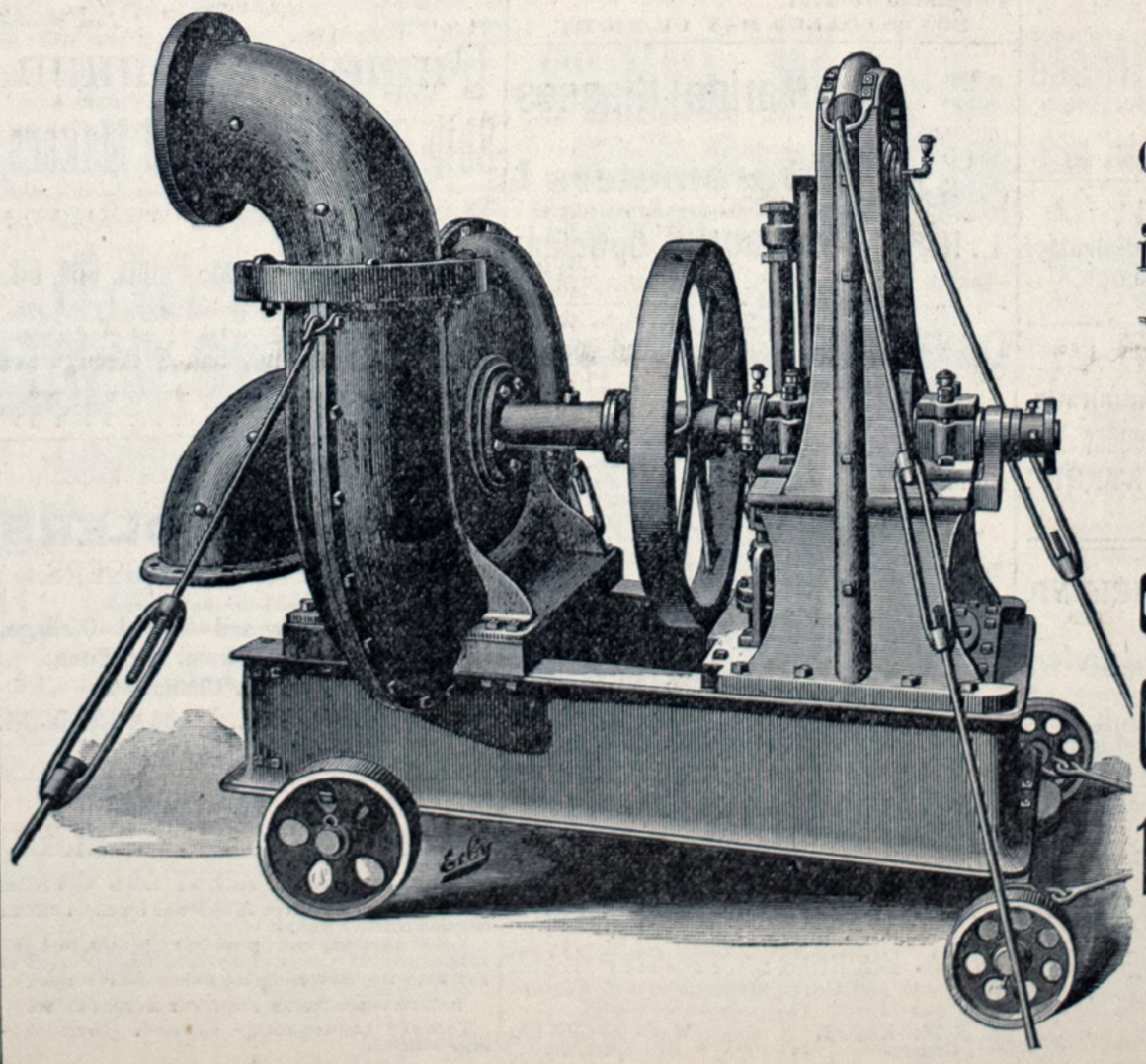
Stmr, ST. LOUIS, A2,
Schr, CHAMPION, A2,
do JAS. D. SAWYER, A2,
do POTOMAC, A2.
do VOUGHT, A2
do S. L. WATSON, A2

For Particulars, and Where Vessels can be seen for Inspection, write to

Henry W. Watson,
16 White Bldg., Buffalo, N. Y.

GOULDS AND AUSTIN.

CENTRIFUGAL PUMPING MACHINERY.



Manufacturers of the Finest Wrecking Pumps in the World.

Full Line Always on Hand.

GOULDS & AUSTIN
167 & 169 Lake-st.,
CHICAGO, ILL.

VESSEL OWNERS AND AGENTS.

H. J. WEBB & CO.,

hip Brokers, Vessel Owners and Agents.

[ESTABLISHED IN 1856.]

H. J. WEBB & Co., will charter Vessels for Lake Trade. pecial attention given to Chartering Vessels in the ake Superior Iron Ore Trade, both for the season and ngle trip.

RCADE BUILDING. 101 ST. CLAIR ST.,

Room 27. Cleveland, Ohio.

TELEPHONE { Office, No. 338. Residence, No. 1328.

WARNER & BECKER,

Vessel Agents and Brokers,

ROOM 10,

Arcade B'ld., 101 St. Clair St,

CLEVELAND, OHIO.

J. J. H. BROWN. EDWARD SMITH

BROWN & CO.,

Ship Brokers and Agents.

Special Attention given to Surveying, Appraising and Settling Marine Losses.

Exchange Building, 202 Main-st., Buffalo, N. Y.

ALEX McDOUGALL,

VESSEL AGENT AND BROKER,

Duluth.

Owners and masters of vessels wishing to get cargoes of grain from this port will do well to confer with me. Will be glad to furnish information in regard to cargoes, also in relation to docks, depth of water, etc., at **Duluth, Agate Bay** (new iron ore port), **Port Arthur, Washburn, Ashland,** and all points near the west end of Lake Superior. Good gangs of men furnished on short notice for trimming cargoes of grain, loading and unloading all kinds of freight.

PALMER & BENHAM,

Vessel Owners & Agents,

New Bank Building, corner of Superior and Bank Street. Cleveland, Ohio.

MOORE, BARTOW AND GILCHRIST,

Ship Brokers and Agents,

No. 101 St. Clair Street, Room 15.
CLEVELAND. - OHIO.

JAMES T. ROSE,

Vessel Agent and Broker,

Room 4, Exchange Building, Duluth, Minn.
I have an excellent gang of Trimmers this season, Captain Miller's old Crew.
Special Attention Paid to Chartering Vessels, and seeing that they get dispatch in Port.
CORRESPONDENCE SOLICITED.

THOS. WILSON

MANAGING OWNER

Wilson's Transit Line.

Gen. Forwarder. Freight and Vessel Agent.
CLEVELAND, O.

JOHN P. DEVNEY,

Marine Collector.

Collections Promptly Attended to.

ASHTABULA HARBOR, OHIO.

PROCTORS IN ADMIRALTY.

Removal!

William H. Condon,

MARINE LAWYER,

240 La Salle cor. Jackson st.

CHICAGO, ILL.

ROBERT RAE,

Admiralty and Insurance Law Office,

Room 37 Merchants' building, CHICAGO. ILL.

WM. H. DeWITT,

Attorney and Proctor in Admiralty.

ROOM No. 6, BLACKSTONE BLOCK.

CLEVELAND, OHIO.

GEORGE E. HALLADAY.

Attorney and Proctor in Admiralty.

Marine Business Promptly Attended To.

OFFICE 21 BUHL BLOCK, DETROIT, MICHIGAN.

CAPT. ALEX. McHARLAND.

Iron Ore Trimmer and Contractor,

ASHLAND, WIS.,

Has a large gang of men, and is in a position to give prompt attention to all orders intrusted to him.

SATISFACTION GUARANTEED IN EVERY RESPECT

C. A. KING,

General Stevedoring. Discharging Loading and Ore Trimming Promptly Attended to. A Large Force of Men always on Hand. Information in regard to

DEPTH OF WATER OF ALL DOCKS IN

ASHLAND HARBOR

gladly furnished. Quick dispatch guaranteed. Patronage Solicited.

C. A. KING, Ashland Wis.

Grummond's Mackinac Line

Stmr. Flora, W. E. Comer, Master, Leaves TOLEDO every Tuesday at 9 a. m., City time.

Stmr. Atlantic, J. R. Jones, Master. Leaves CLEVELAND every Friday at 9 p. m., City time.

For Mackinac, St. Ignace, Cheboygan, Alpena, Oscoda and way ports. For Freight or Passage apply to ANDERSON & BATES, Agents, Dock Foot of Superior street, Cleveland, O.
S. B. GRUMMOND, Owner, Detroit, Mich.

A. J. MORSE & SON.

140 CONGRESS ST. BOSTON.

HULL'S RUBBER STORE.

SPECIAL GRADES OF

WATER AND STEAM HOSE

FOR MARINE USE.

Steam Packing, Gaskets. Valves, etc., etc.

Rubber clothing, boots & shoes.

E. W. HULL,

237 Superior-st, CLEVELAND, O

Send for Price List.

CANVAS OIL BAGS for use on board Vessel and Steamer to lessen the dangerous effects of heavy seas. Write for pamphlet.

M. H Dodge & Co., 24 Broadway, Cleveland, O

GEORGE SAAL'S SON.

Copper-smithing of all Kinds.

VESSEL WORK A SPECIALTY.

403 and 405 Detroit-st., corner Duane-st.. Telephone 1638. CLEVELAND, O.

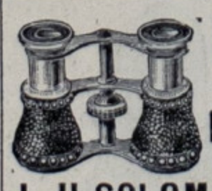
MARTIN MULLEN, Agent,

DEALER IN

Youghiogheny & Massillon Coal

DOCKS AT GOVERNMENT PIER AND RIVER BED SLIP.

Office, 81 Perkins Building, East Side of Main Street Bridge, CLEVELAND, OHIO.
Telephone No. 2701.
BOATS COALED DAY OR NIGHT.



Marine Glasses AND **Barometers!**

Spring import just received at

L. H. SOLOMONSON'S, Optician,

252 SUPERIOR ST., CLEVELAND, O.

DAVID BARNHISEL, Agent.

DOMESTIC & STEAM COAL

Cleveland. Ohio

VESSELS SUPPLY STORE.

SPIEGLE BROS.

MARINE SUPPLY STORE

WHOLESALE AND RETAIL

Grocers. Bakers and Ship Supplies;

Fresh & Salt Meat of all Kind.

30 & 32 River-st., opposite Detroit Steamboat Landing, and 184 Broadway. Telephone 112,
CLEVELAND, OHIO.

SHIP AHOY!

WHEN YOU ARRIVE AT SARNIA BE SURE TO CALL AT

CAPT. A. E. McGREGOR'S, FRONT ST.,

FOR GROCERIES AND PROVISIONS;

ALSO, AT

W. A. BUCHNER'S, OPP. CITY HALL

for Fresh and Cured Meats, Ice, etc. Prompt delivery. Open day and night.

A. E. McGREGOR, Grocer. W. A. BUCHNER, Butcher.

S. B. GRUMMOND,

OWNER OF FIRST-CLASS

Tugs for Wrecking, Raft Towing, Etc.

ALSO, 16 STEAM PUMPS, ROTARY AND WORTHINGTON,

Improved Horizontal Straight Base Hydraulic Jacks.

Sub-marine Divers, Hawsers, Lighters, Etc.

WAREHOUSE AND OFFICE ON DOCK, BET. FIRST AND CASS STS.,

OWNER OF TUGS 'Winslow,' 'Leviathan,' 'M. Swain,' 'Champion,' 'Wm. A. Moore,' and 'Oswego.' **Detroit, Mich.**

☞OFFICE OPEN DAY AND NIGHT. SATISFACTION GUARANTEED.☜

BRANCH OFFICES at PORT HURON & CHEBOYGAN, MICH

WRECKING TUG

LEVIATHAN, CAPT. M. SWAIN, STATIONED AT CHEBOYGAN

HOWARD H. BAKER & CO.,

Ship Chandlers & Sail Makers.

WHOLESALE AND RETAIL DEALERS IN

Cordage, Wire Rope Blocks, Canvas, Anchors, Chains, Paints, Oils, Naval Stores, etc.

Cylinder, Lard, Signal and Lubricating Oils a Specialty.

AGENTS FOR THE

American Ship Windlass Company for Lakes Erie and Ontario.

IMPORTERS OF NAUTICAL INSTRUMENTS OF EVERY DESCRIPTION.

We carry a larger assortment of goods in our line than any other house in the trade and can not be undersold.

Call at Our Mammoth Store and See for Yourselves.---18, 20, 22, 24 & 26 Terrace,

BUFFALO, NEW YORK.

The J. P. Donaldson Co.,

Ship Chandlers,

SAIL MAKERS AND RIGGERS,

Manufacturers of OARS and OAR LOCKS, Dealers in

Cotton Duck, Wire Rope,

Cordage, Etc.

22 and 24 Woodward Ave.,

DETROIT, MICH.

D. S. AUSTIN. EMMET AUSTIN.

D.S. AUSTIN & CO.

Ship Chandlers & Sail Makers.

WHOLESALE AND RETAIL DEALERS IN

Cotton Duck, Cordage, Wire Rope, Oakum, Pitch, Tar, Paints, Oils, etc.

Complete Outfits of Sails. Rigging, etc., for Vessels and Steamers, furnished on short notice and at as low prices as any one on the Lakes.
Ft. of Washington St., BUFFALO, N. Y.

GEO. C. FINNEY. JAS. CHANNON

Finney and Channon,

Ship Chandlers & Sail Makers,

Manila, Hemp and Wire Rigging.

Blocks. Anchors, Chains, Paints. Oils, etc.

Special Attention Given to Out-fits and Repairs.

270 and 272 South Water St.,

CHICAGO, - - ILLINOIS.

J. W. GROVER & SON,

SHIP CHANDLERS

SAIL MAKERS AND RIGGERS,

IMPORTERS AND WHOLESALE DEALERS IN

Wire Rope, Manila and Tarred Cordage, Canvas, Blocks, Oakum, Tar, Pitch, Oars. Anchors, Chains, etc.

117 & 119 RIVER ST., & 134 & 135 DOCK, CLEVELAND, OHIO.

H. L. SHAW,

EAST SAGINAW, - - - MICH.,

VESSEL BROKER, AGENT AND OWNER

Special attention given to charters for the LUMBER COAL AND STONE TRADE.

Vessel property and machinery bought, sold and exchanged. If you have anything to sell or want to buy write me; no commission unless sale is made.

MARINE COLLECTIONS PROMPTLY ATTENDED TO.

Tugs and Lighters always on hand. Correspondence solicted.

Cleveland Block Co.,

MANUFACTURERS OF

Iron Tackle Blocks

TAKING THE PLACE OF WOODEN BLOCKS FOR ALL PURPOSES.

159 River St., CLEVELAND, O.

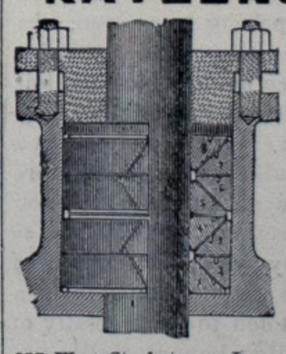
ROPE NETTING

For Steamers and Steam Yachts a Specialty.

E. A. EVANS, Rigger,

193 South St., New York.

KATZENSTEIN'S



SELF-ACTING METAL PACKING

FOR PISTON RODS, VALVE STEMS, Etc.

Adopted and in use by the principal Iron Works and Steamship Companies within the last eight years in this and Foreign countries. Also flexible tubular metallic packing for slip-joints on steam pipes and for hydraulic pressure. For full particulars and references address

L. KATZENSTEIN & CO

357 West St., between Leroy and Clarkson-st, N. Y.

CAPT. THOS. WILSON, who uses this packing on his Steamers, and THE MARINE RECORD are Agents for Cleveland and the Lakes.

McKINNON BROS.

Ashtabula Harbor, O.,

Machinists, Shipsmiths & Steamfitters;

ALSO, DEALERS IN

Engineers' Supplies, Lubricating and Burning Oils.

BUSINESS PROMPTLY ATTENDED TO.

A. H. MILLS'

Harbor and River Tug Line

Detroit, Mich.

Office No. 8, Foot of Woodward Ave., on the Dock.

Telephone No. 508.

Tugs Shoo Fly, Dave and Mose.

Steam Pumps and Divers on Short Notice.

HARBOR TUG MOLLIE SPENCER.

ENGINE, 20 by 24, Port Huron, Mich. For light wrecking this tug has the most complete outfit on the lakes. Supplied with steam ejectors, capacity of 32,000 gallons per minute, hawsers, steam pumps, diving rigs, blocks etc., just the outfit for waterlogged and sunken boats, at cheap rates. River and harbor towing. Telephone, telegraph,
LYNN'S TUG OFFICE.

TUG FOR SALE.

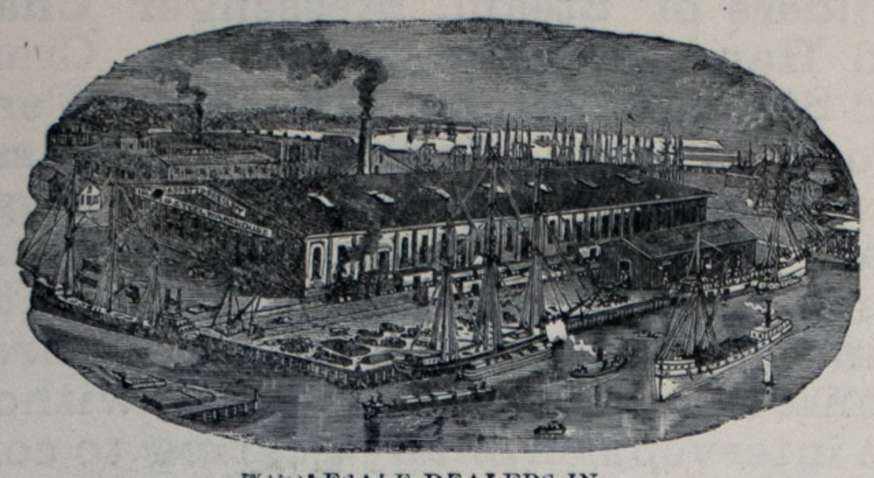
Length over all, 52 feet; beam, 13 feet; depth of hold, 5 feet 8 inches; net tonnage, 7.38. Engine, 10x12; upright steel boiler. One year old, and in first-class order. Address,
JAS. LAIRD, Ashtabula Harbor, O.

IRA B. BASSETT. GEORGE PRESLEY, Jr.

BASSETT & PRESLEY,

[Successors to W. H. McCurdy & Co.]

Office and Warehouse, cor. Elm & Hemlock Streets, Cleveland, O.



WHOLESALE DEALERS IN

BAR, BOILER HOOP, ANGLE AND SHEET IRON.

Nails, Railroad and Boat Spikes, Boiler, Tank and Cooper Rivets, Swedes Iron, Boiler Tubes, Nail Rods, Etc., Etc., Etc.

We Represent in this Market the Following Well-known Manufacturers:

Andrews Bros. & Co. .....Youngstown, O. BAR IRON AND POLISHED SHAFTING.	Dilworth, Porter & Co., Limited..Pittsburg, Pa. RAILROAD AND BOAT SPIKE.
Reading Iron Works.....Philadelphia, Pa. BOILER TUBES.	Hoopes & Townsend,.....Philadelphia, Pa. BOILER AND TANK RIVETS.
Central Iron Works.....Harrisburg, Pa. BOILER PLATES.	Sanderson Bros. Steel Co,.....Syracuse, N. Y. CAST STEEL.
Lindsay & McCutcheon,.....Pittsburg, Pa, HOOP, BAND & STAR HORSESHOE IRON.	Joseph Corns & Sons .....Massillon, O. CROWN STAY BOLT IRON.
George W. Johnson,.....Newcastle, Pa. TANK SHEET IRON.	Pencoyd Iron Works,.....Philadelphia, Pa. ANGLE IRON.

A Complete Stock of all above Goods in Our Warehouse.

SAMUEL F. HODGE & CO.,

MANUFACTURERS OF

MARINE,

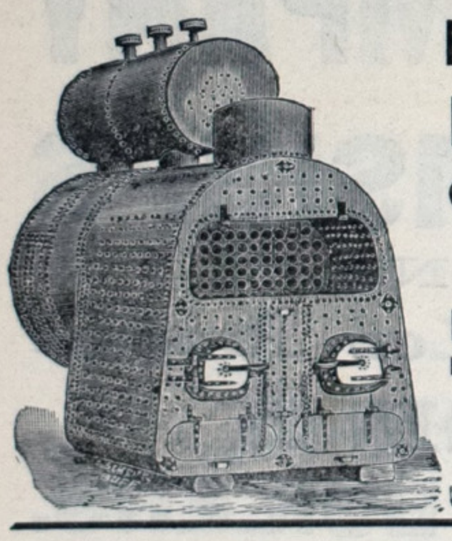
Stationary & Portable Engines,

MINING MACHINERY AND

PROPELLER WHEELS,

Riverside Iron Works, 314 to 326 Atwater Street,

DETROIT, MICH.



EAGLE BOILER WORKS,

M. RITER, Prop'r,

Cor. Indiana & Mary St.,

BUFFALO, N. Y.

MANUFACTURER OF

High and Low Pressure

Marine, Stationary, Portable, Locomotive and Upright Boilers; also, Salt Pans, Smoke Pipes and Heavy and Light Plate Iron Work of all Descriptions.

REPAIRS PROMPTLY ATTENDED TO.

O. & P. COAL CO. & THOS. AXWORTHY.

FUEL DEPARTMENT.

PRESLEY, ARTHUR & CO., AG'TS.

Steamboats, Tugs, etc, Coaled Day and Night.

DEALERS IN LACKAWANNA ANTHRACITE COAL.

Docks: Ft. West River St., Whisky Island, C. P. R'y. Slip, Government Pier

OFFICE 130 RIVER-ST., CLEVELAND, OHIO.

BAGNALL & LOUD BLOCK CO.,

BOSTON, MASS.

The Largest and Most Reliable Manufacturers in the United States of

TACKLE BLOCKS.

Their Specialties are: Self-Lubricating Metaline Blocks: Self-locking Link Snatch Blocks: Self-adjustable Five Roll Roller Bush Blocks; Loud's Patent Non-chokable Diaphragm Pumps will pump Sand, Gravel, etc., without injury to the Pump, having no plunger. Easiest Working Pump in the Market.

OUTFITS FOR VESSELS A SPECIALTY.

We make the most durable grade of Blocks to be obtained in the market. Call for our SELF-ADJUSTABLE FIVE ROLL ROLLER BUSHED STAR BRAND BLOCKS AND DO AWAY WITH REPAIRS.

ST. MARY'S, OHIO. MONTPELIER, OHIO. } OAR MILLS. NEPTUNE ANCHOR WORKS

DEGRAUW, AYMAR & CO.,

MANUFACTURERS AND IMPORTERS OF

CORDAGE, OAKUM, WIRE ROPE,

CHAINS, ANCHORS, OARS, BLOCKS

COTTON AND FLAX DUCKS, FLAGS

BUNTINGS, RUSSIA BOLT ROPE,

MARINE HARDWARE AND SHIP-CHANDLERS' GOODS GENERALLY.

NOS. 34 AND 35 SOUTH STREET, NEW YORK.

A PUZZLE.

Which Man is the Tallest?

If you measure carefully the figures in above Cut you will find the man who appears the shortest is in reality the tallest. If you will coal your boat at my dock, adjoining S. F. Hodge Iron Works, you will get better dispatch and better COAL than at any other place in the city.

O. W. SHIPMAN,

OFFICE:

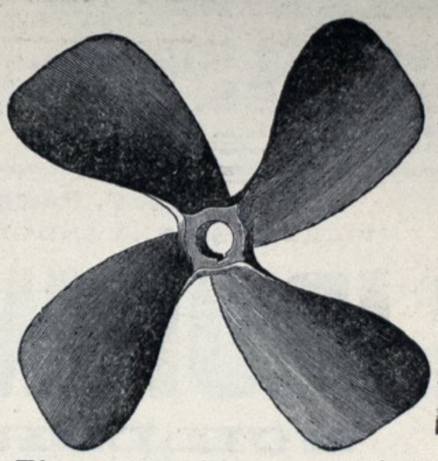
Cor. Griswold and Larned Sts.

H. G. TROUT,

KING IRON WORKS,

BUFFALO, N. Y.,

MANUFACTURER OF



Triple Expansion Marine Engines,

Three Cylinder and Fore and Aft and Steeple Compound Marine Engines,

High and Low Pressure Engines,

SECTIONAL PROPELLER WHEELS,

PROPELLER, TUG & YACHT WHEELS

These wheels are noted for their extra speed and towing power, or aproportionate saving of coal.

PRICES QUOTED ON APPLICATION.

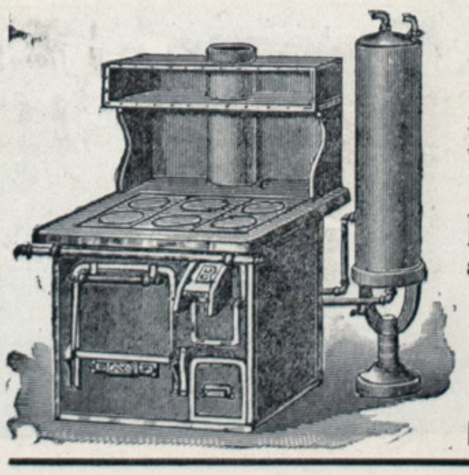
F. & H. BORN,

MANUFACTURERS OF

STEEL PLATE FRENCH RANGES

For Steamboats and Vessels,

Hotels, Restaurants and Private Families.



The Best Material Used

EVERY RANGE WARRANTED PERFFCT.

Adapted for Hard or Soft Coal, Coke or Wood.

Broiler and High Hot Closet and Steam Table Attached.

BORN'S STEEL PLATE FRENCH RANGES are now in use on many Vessels and Steamboats, the owners of which testify to their durability, economy of fuel, conveniance and elegance of finish.

F. & H. BORN,

128 Superior st., CLEVELAND, O.

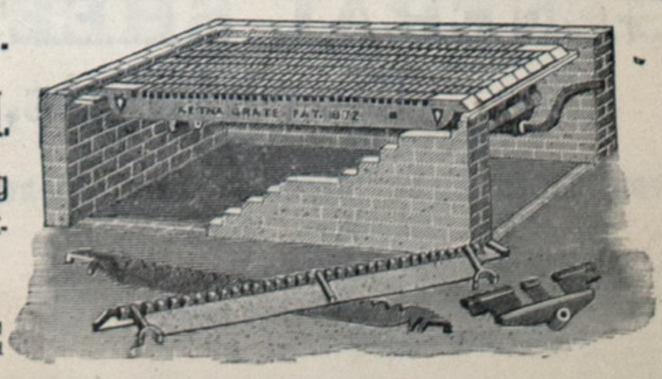
THE ÆTNA GRATE.

G. C. BARNES, Agt.

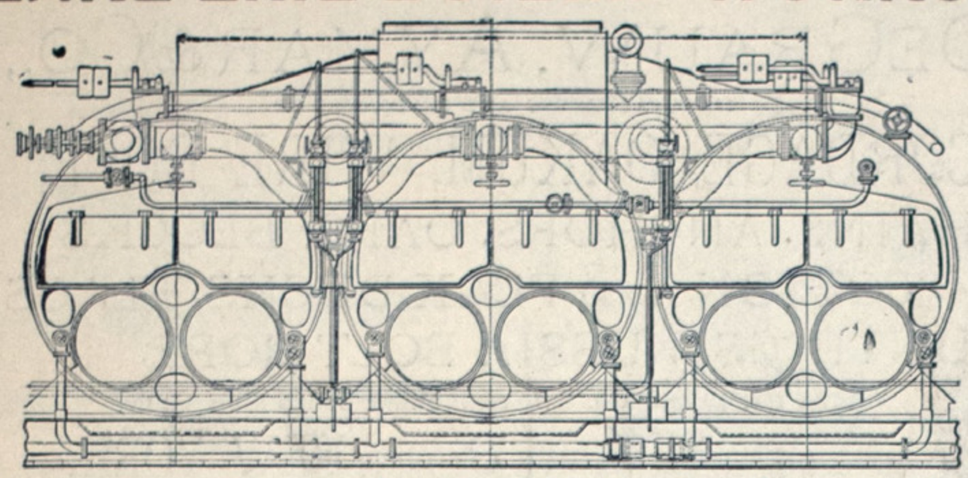
This Improved Shaking Grate Especially Adapted to Burning Slack.

Globe Iron Works, Manufac's.,

Office and Foundry, corner of Elm and Spruce-sts., CLEVELAND, O.



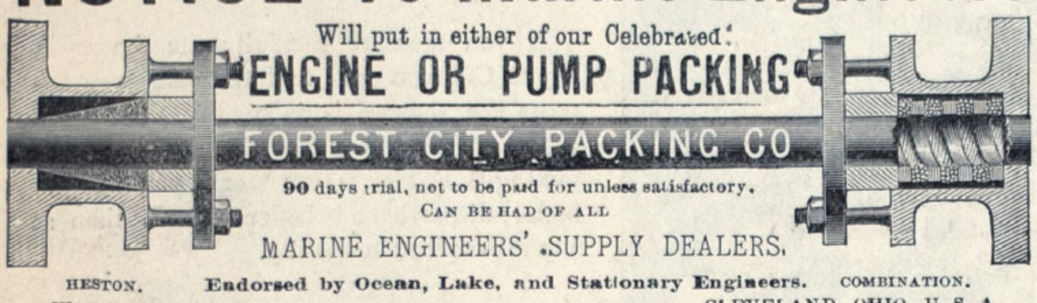
LAKE ERIE BOILER WORKS.



The best equipped plant in America for the manufacture of Modern Marine Boilers

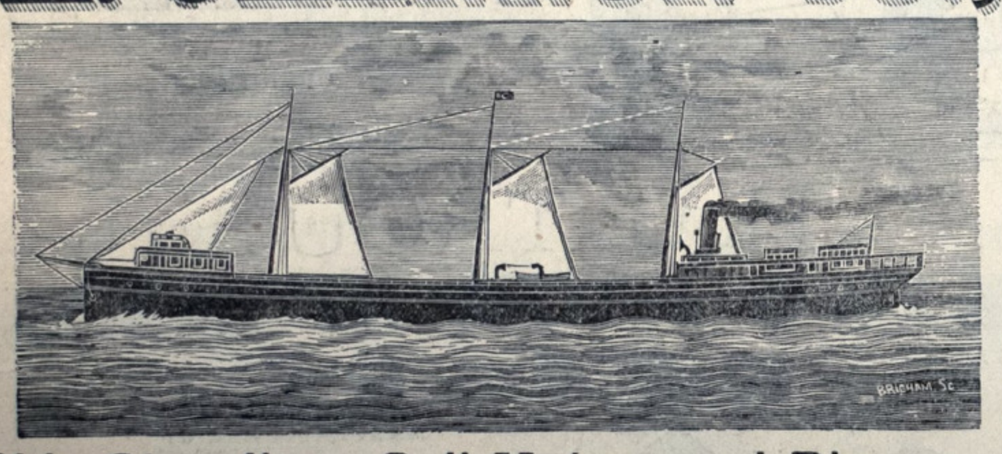
BUFFALO, NEW YORK

NOTICE--To Marine Engineers


Will put in either of our Celebrated
ENGINE OR PUMP PACKING
FOREST CITY PACKING CO
90 days trial, not to be paid for unless satisfactory.
CAN BE HAD OF ALL
MARINE ENGINEERS' SUPPLY DEALERS.

HESTON. Endorsed by Ocean, Lake, and Stationary Engineers. COMBINATION.
Write for Circular. CLEVELAND, OHIO, U. S. A.

H. CHANNON CO.,



Ship Chandlers, Sail Makers and Riggers.
STEAM-BOAT SUPPLIES.
22 to 26 Market-St., near Randolph-St., Chicago, Ill's.

Established in 1857.

AMERICAN SHIP WINDLASS CO.,

Builders of Steam, Messenger Chain and Hand Windlasses, Power, Crank and Steam Capstans, Wharf and Ferry Drops. Their Capstan Windlasses have a Power Capstan with a single head which has power and speed arrangement entirely independent of the Windlass, and which makes a direct connection with the Windlass without the intervention of any gearing to complicate it and increase the friction.

In all their styles of Steam Windlasses they make a direct connection between the engines and the windlass without counter shafts or additional gearing. This saves friction and liability to break down, and conduces to durability and ease in operating. They also have a counterbalance for the engines and an automatic lubricator for worm and worm gear, and the engines are placed together in the most accessible position. The above improvements and others too numerous to mention, but which are familiar to Masters, Owners and Builders, are covered by Patents owned exclusively by this Company. For plans and information

Address,

FRANK S. MANTON, Agent. P. O. box 53, Providence, R. I.

H. M. HANNA, PRESIDENT. JOHN F. PANKHURST, VICE PRESIDENT AND GENERAL MANAGER. LUTHER ALLEN, SECRETARY AND TREASURER

THE GLOBE IRON WORKS COMPANY

BUILDERS OF

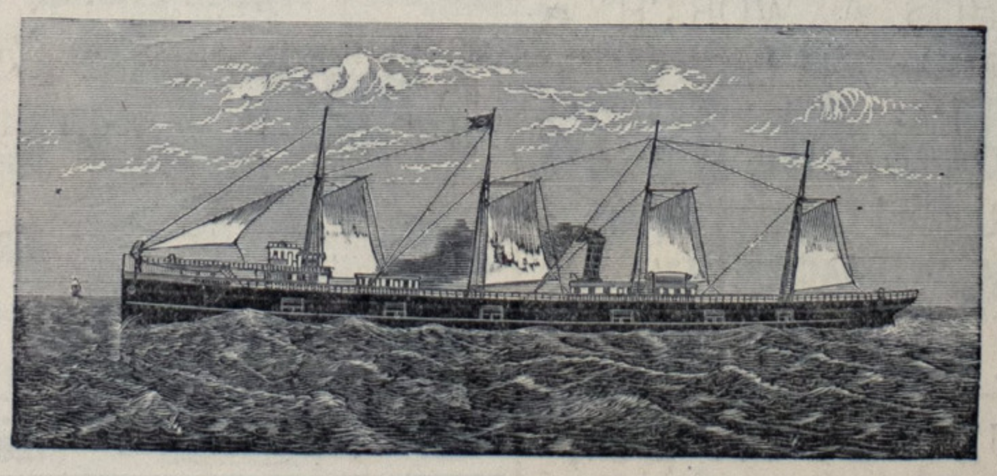
IRON AND STEEL STEAMSHIPS

AND VESSELS OF ALL DIMENSIONS,

Triple Expansion, Compound, High Pressure and Low Pressure

MARINE AND STATIONARY ENGINES,
MARINE, STATIONARY & PORTABLE BOILERS.

Blast Furnace and Rolling Mill Machinery, Hoisting and Pumping Engines, Portable Hoisting Engines.



Steam Pumps, Steam and Hand Windlasses, Winches, and Marine Appliances of Every Description.

GENERAL SHEET AND PLATE IRON WORKERS,
Machinists, Boiler-Makers and Founders.

Builders of

Iron Steamships "Onoko," "Wm. Chisholm," "J. H. Devereux," Etc.
Steel Steamship "Spokane."
Passenger Steamer "Darius Cole."
Steam Yacht "Twilight."
Iron Tugs "International" and "Record."

OFFICE & WORKS, Spruce and Elm Streets.
IRON SHIP YARD, Old River Bed, foot of St. Paul St

CLEVELAND, OHIO.